AzureWave Technologies, Inc.

AW-NM191NF

IEEE 802.11b/g/n Wireless LAN
M.2 1216 LGA Module

Datasheet

Rev. A

STD

B1

FORM NO.: FR2-015_ A Responsible Department：WBU Expiry Date: Forever
The information contained herein is the exclusive property of AzureWave and shall not be distributed, reproduced, or disclosed in whole or in part without prior written permission of AzureWave.

Features

WLAN

- M.2 TYPE 1216: 16mm(L) x 12mm(W) x 1.95 mm(H)(Max)
- SDIO/USB2.0 interface support for WLAN
- High speed wireless connection up to 72.2 Mbps for Wi-Fi
- Multiple power saving modes for low power consumption
- IEEE 802.11i for advanced security
- Support China WAPI
- Lead-free design

The information contained herein is the exclusive property of AzureWave and shall not be distributed, reproduced, or disclosed in whole or in part without prior written permission of AzureWave.

AzureWave Technologies, Inc.

Revision History

Document NO: R2-2191NF-DST-01

Version	Revision Date	DCN NO.	Description	Initials	Approved
Version 0.1	2014/02/25		● Initial version	Terry Chu	Amos Fu
Version 0.2	2014/04/25		● Updated Mechanical dwg. and schematics	Terry Chu	Amos Fu
Version 0.3	2015/04/30		● Updated Mechanical dwg.	Terry Chu	Amos Fu
Version 0.4	2015/08/24		● Update power spec and mechanical draw	Terry Chu	Amos Fu
Version 0.5	2015/10/15		● Add ESD test condition & update storage temperature	Terry Chu	Amos Fu
Version 0.6	2016/07/15		● Modify pin definition: remove REF_CLK_OUT function. ● Correct TYPO in 2.Key feature	Renton Tao	Daniel Lee
Version 0.7	2018/08/29		● Add Absolute Maximum Ratings ● Add Power up sequence ● Add voltage level in pin definition ● Add shipping information	Renton Tao Josh Lin	N.C. Chen Patrick Lin
Version 0.8	2018/09/13		● Indicate Antenna location	Renton Tao	N.C. Chen
Version 0.9	2019/04/08		● Add product weight and update block diagram	Josh Lin	Patrick Lin
Version 1.0	2019/06/27		● Add more information on “4. Specifications Table”	Josh Lin	Patrick Lin
Version 1.1	2019/09/24		● Add version number on top page	Josh Lin	Patrick Lin
Version 1.2	2019/10/25		● Revise USB pin definition	Renton Tao	N.C. Chen
Version 1.3	2020/02/19		● Upgrade Receive Sensitivity ● Update regulatory	Renton Tao	N.C. Chen
Version 1.4	2020/05/28		● Update the number of channels	Renton Tao	N.C. Chen
Version 1.5	2020/10/15		● Update “6.1 Pin Description (1216 M.2 Solder down)” ● Add the figure of PCB footprint with Pin No.	Renton Tao	N.C. Chen
Version 1.6	2021/1/13		● Update packing information	Josh Lin	Patrick Lin
A	2021/03/10		● New format	Renton Tao	N.C. Chen

The information contained herein is the exclusive property of AzureWave and shall not be distributed, reproduced, or disclosed in whole or in part without prior written permission of AzureWave.

Table of Contents

Features 2
Revision History 3
Table of Contents 4
1. Introduction 5
1.1 Product Overview 5
1.2 Block Diagram 6
1.3 Specifications Table 7
1.3.1 General 7
1.3.2 WLAN 7
1.3.3 Operating Conditions 8
2. Pin Definition 10
2.1 Pin Table 10
3. Electrical Characteristics 15
3.1 Absolute Maximum Ratings 15
3.2 Recommended Operating Conditions 15
3.3 Digital IO Pin DC Characteristics 15
3.3.1 DC Electricals-1.8V Operation (VIO_SD) 15
3.4 Host Interface 16
3.4.1 SDIO Interface 16
3.5 Power up Sequence 18
3.5.1 Reset Configuration 18
4. Mechanical Information 19
4.1 Mechanical Drawing 19
4.2 Antenna connector drawing 20
4.3 Recommended Footprint Pattern 21
5. Shipping Information 22
5.1 Tape information 22
5.1 Reel information 23
5.2 Packing Information 24
6. Module Marking Information 28

The information contained herein is the exclusive property of AzureWave and shall not be distributed, reproduced, or disclosed in whole or in part without prior written permission of AzureWave.

1. Introduction

1.1 Product Overview

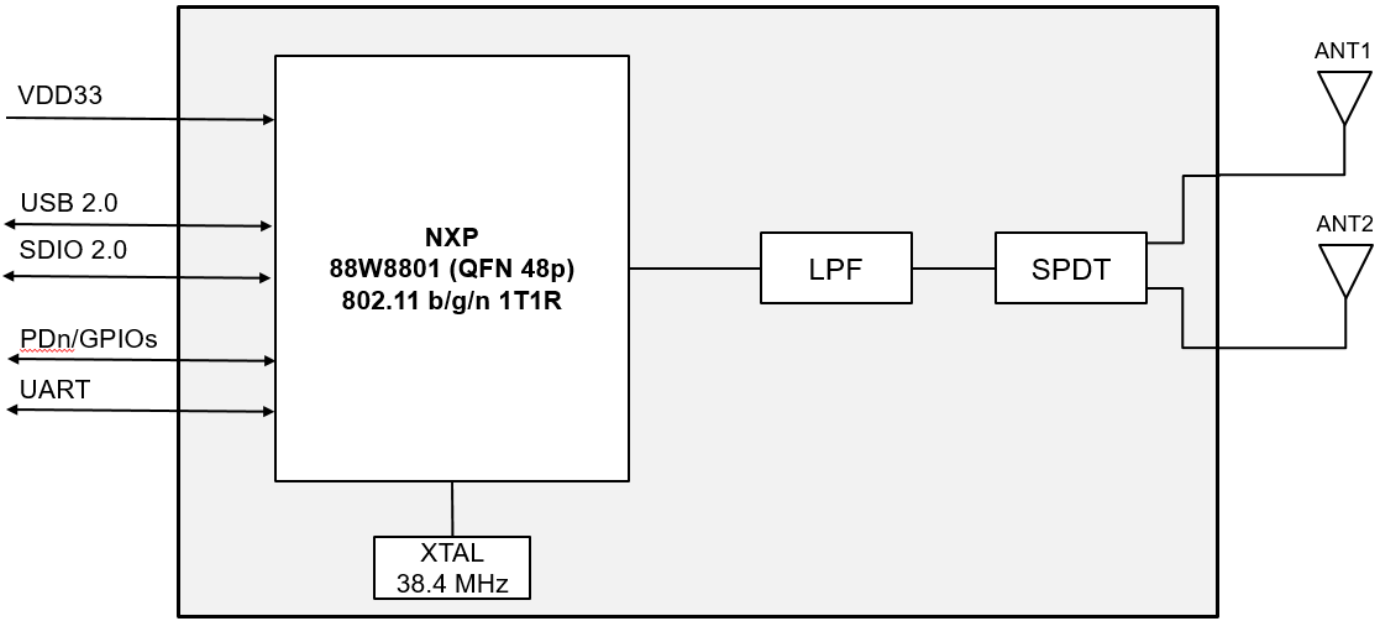
AzureWave Technologies, Inc. introduces the IEEE 802.11b/g/n 1X1WLAN M.2 1216 module --- **AW-NM191NF**. The module is targeted to mobile devices including **Notebook, TV, Tablet and Gaming Device** which need small package module, low power consumption, multiple interfaces and OS support. By using AW-NM191NF, the customers can easily enable the Wi-Fi applications with the benefits of **high design flexibility, short development cycle, and quick time-to-market.**
Compliance with the IEEE 802.11b/g/n standard, the AW-NM191MA uses Direct Sequence Spread Spectrum (**DSSS**), Orthogonal Frequency Division Multiplexing (**OFDM**), **DBPSK**, **DQPSK**, **CCK** and **QAM** baseband modulation technologies. A high level of integration and full implementation of the power management functions specified in the IEEE 802.11 standard minimize the system power requirements by using AW-NM191NF. In addition to the support of **WPA/WPA2** and **WEP** 64-bit and 128-bit encryption, the AW-NM191NF also supports the **IEEE 802.11i** security standard through the implementation of **Advanced Encryption Standard** (**AES)/Counter Mode CBC-MAC Protocol (CCMP),** Wired Equivalent Privacy (**WEP)** with Temporal Key Integrity Protocol (**TKIP)**, Advanced Encryption Standard (**AES**)/Cipher-Based Message Authentication Code (**CMAC**), and WLAN Authentication and Privacy Infrastructure (**WAPI**) security mechanisms.

AW-NM191NF supports **SDIO or USB2.0 interface** for WLAN to the host processor.
AW-NM191NF is suitable for multiple mobile processors for different applications with the support cellular phone co-existence.
AW-NM191NF module adopts NXP's latest highly-integrated WLAN SoC---**88W8801**. All the other components are implemented by all means to reach the mechanical specification required.

The information contained herein is the exclusive property of AzureWave and shall not be distributed, reproduced, or disclosed in whole or in part without prior written permission of AzureWave.

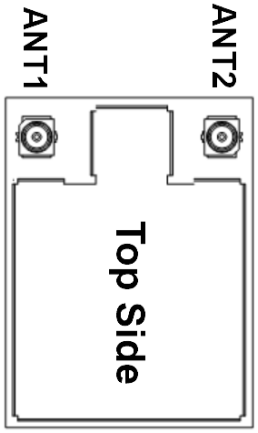
1.2 Block Diagram

AW-NM191NF M.2 1216 Module



AW-NM191NF Block Diagram

Module antenna configuration



The information contained herein is the exclusive property of AzureWave and shall not be distributed, reproduced, or disclosed in whole or in part without prior written permission of AzureWave.

1.3 Specifications Table

1.3.1 General

Features	Description
Product Description	IEEE 802.11 Wi-Fi b/g/n Wireless LAN M.2 Module
Major Chipset	NXP 88W8801
Host Interface	Wi-Fi ● SDIO2.0 ● USB2.0
Dimension	12mm(W) x 16mm(L) x 1.95mm(H) (Tolerance remarked in mechanical drawing)
Form factor	M.2 1216
Antenna	1T1R (w/ antenna diversity) I-PEX MHF4 Connector Receptacle (20449) ANT1：WiFi → TX/RX ANT2：WiFi → TX/RX
Weight	0.6g

1.3.2 WLAN

Features	Description
WLAN Standard	IEEE 802.11 b/g/n
WLAN VID/PID	N/A
Frequency Rage	2.4 GHz：2.412 ~ 2.472 GHz
Modulation	DSSS, OFDM, DBPSK, DQPSK, CCK, 16-QAM, 64-QAM
Number of Channels	**2.4GHz** ■ USA, NORTH AMERICA, Canada and Taiwan – 1 ~ 11 ■ China, Australia, Most European Countries, Japan – 1 ~ 13

The information contained herein is the exclusive property of AzureWave and shall not be distributed, reproduced, or disclosed in whole or in part without prior written permission of AzureWave.

<table>
<tr><td>Output Power
(Board Level Limit)*</td><td>2.4GHz
<table>
<tr><td></td><td>Min</td><td>Typ</td><td>Max</td><td>Unit</td></tr>
<tr><td>11b (11Mbps)
@EVM<35%</td><td>15.5</td><td>17</td><td>18.5</td><td>dBm</td></tr>
<tr><td>11g (54Mbps)
@EVM≦-27 dB</td><td>12.5</td><td>14</td><td>15.5</td><td>dBm</td></tr>
<tr><td>11n (HT20 MCS7)
@EVM≦-28 dB</td><td>11.5</td><td>13</td><td>14.5</td><td>dBm</td></tr>
</table></td></tr>
<tr><td>Receiver Sensitivity</td><td>2.4GHz
<table>
<tr><td></td><td>Min</td><td>Typ</td><td>Max</td><td>Unit</td></tr>
<tr><td>11b (11Mbps)</td><td>-</td><td>-87</td><td>-84</td><td>dBm</td></tr>
<tr><td>11g (54Mbps)</td><td>-</td><td>-73</td><td>-70</td><td>dBm</td></tr>
<tr><td>11n (HT20 MCS7)</td><td>-</td><td>-70</td><td>-67</td><td>dBm</td></tr>
</table></td></tr>
<tr><td>Data Rate</td><td>■ 802.11b: 1, 2, 5.5, 11Mbps
■ 802.11g: 6, 9, 12, 18, 24, 36, 48, 54Mbps
■ 802.11n: up to 72.2Mbps</td></tr>
<tr><td>Security</td><td>■ WAPI
■ WEP 64-bit and 128-bit encryption with H/W TKIP processing
■ WPA/WPA2 (Wi-Fi Protected Access)
■ AES-CCMP hardware implementation as part of 802.11i security standard</td></tr>
<tr><td>Operating System Compatibility</td><td>■ Linux</td></tr>
<tr><td>Regulatory</td><td>■ CE, FCC and Japan</td></tr>
</table>

* If you have any certification questions about output power please contact FAE directly.

1.3.3 Operating Conditions

Features	Description
Operating Conditions	
Voltage	Power supply for host: 3.3V
Operating Temperature	0℃ ~ 70 ℃
Operating Humidity	less than 95% R.H.
Storage Temperature	-40℃ ~ 90 ℃
Storage Humidity	less than 95% R.H.
ESD Protection	

The information contained herein is the exclusive property of AzureWave and shall not be distributed, reproduced, or disclosed in whole or in part without prior written permission of AzureWave.

Human Body Model	+-2kV per MIL-STD-883H Method 3015.8
Changed Device Model	+-500V per JEDEC EIA/JESD22-C101E

The information contained herein is the exclusive property of AzureWave and shall not be distributed, reproduced, or disclosed in whole or in part without prior written permission of AzureWave.

2. Pin Definition

2.1 Pin Table

PIN No.	Definition	Description	Type	Level
1	TMS	JTAG controller select (input)	Input	VIO
2	TCK	JTAG test clock (input)	Input	VIO
3	TDI	JTAG test data (input)	Input	VIO
4	3.3V	3.3V Power supply.	VCC	-
5	3.3V	3.3V Power supply.	VCC	-
6	GND	Ground.	GND	-
7	TDO	JTAG test data (output)	Input	VIO
8	NC	No connect to gold fingers.	Floating	-
9	NC	No connect to gold fingers.	Floating	-
10	NC	No connect to gold fingers.	Floating	-
11	NC	No connect to gold fingers.	Floating	-
12	NC	No connect to gold fingers.	Floating	-
13	NC	No connect to gold fingers.	Floating	-
14	NC	No connect to gold fingers.	Floating	-
15	NC	No connect to gold fingers.	Floating	-
16	NC	No connect to gold fingers.	Floating	-
17	GND	Ground.	GND	-
18	NC	No connect to gold fingers.	Floating	-
19	NC	No connect to gold fingers.	Floating	-
20	GND	Ground.	GND	-
21	CON[0]	Boot Options and Host Interface Selection 00 = UART (debug) 01 = reserved 10 = SDIO (CON1=>HIGH ,CON0=>Low) 11 = USB (default)	Input	1.8V

The information contained herein is the exclusive property of AzureWave and shall not be distributed, reproduced, or disclosed in whole or in part without prior written permission of AzureWave.

22	CON[1]		Input	1.8V
23	GND	Ground.	GND	-
24	NC	No connect to gold fingers.	Floating	-
25	NC	No connect to gold fingers.	Floating	-
26	GND	Ground.	GND	-
27	NC	No connect to gold fingers.	output	-
28	NC	No connect to gold fingers.	Floating	-
29	NC	No connect to gold fingers.	Floating	-
30	NC	No connect to gold fingers.	Floating	-
31	NC	No connect to gold fingers.	Floating	-
32	GND	Ground.	GND	-
33	NC	No connect to gold fingers.	Floating	-
34	NC	No connect to gold fingers.	Floating	-
35	GND	Ground.	GND	-
36	NC	No connect to gold fingers.	Floating	-
37	NC	No connect to gold fingers.	Floating	-
38	GND	Ground.	GND	-
39	NC	No connect to gold fingers.	Floating	-
40	NC	No connect to gold fingers.	Floating	-
41	GND	Ground.	GND	-
42	GPIO0	GPIO	Input/Output	VIO
43	HOST_WAKE	Host-to-SoC Wakeup (input)	input	1.8V
44	SD_VIO	I/O SDIO Power Supply	VCC	-
45	PDN	Full Power-Down (active low) 0 = full power-down mode 1 = normal mode • Connect to power-down pin of host or 3.3V • External host required to drive this pin high for normal operation • No internal pull-up on this pin.	VCC	3.3V/1.8V

The information contained herein is the exclusive property of AzureWave and shall not be distributed, reproduced, or disclosed in whole or in part without prior written permission of AzureWave.

46	GPIO1	GPIO	Input/Output	VIO
47	SDIO DAT3	SDIO 4-bit Mode: Data line Bit[3] SDIO 1-bit Mode: Reserved SDIO SPI Mode: Card select (active low)	Input/Output	SD_VIO
48	SDIO DAT2	SDIO 4-bit Mode: Data line Bit[2] or read wait (optional) SDIO 1-bit Mode: Read wait (optional) SDIO SPI Mode: Reserved	Input/Output	SD_VIO
49	SDIO DAT1	SDIO 4-bit Mode: Data line Bit[1] SDIO 1-bit Mode: Interrupt SDIO SPI Mode: Interrupt SDO is tristate when SCSn is inactive. Enables multiple devices driving SDO line.	Input/Output	SD_VIO
50	SDIO DAT0	SDIO 4-bit Mode: Data line Bit[0] SDIO 1-bit Mode: Data line SDIO SPI Mode: Data output	Input/Output	SD_VIO
51	SDIO CMD	SDIO 4-bit Mode: Command/response (input/output) SDIO 1-bit Mode: Command line SDIO SPI Mode: Data input USB Mode: USB_VBUS_ON (input)	Input/Output	SD_VIO
52	SDIO CLK	SDIO 4-bit Mode: Clock input SDIO 1-bit Mode: Clock input SDIO SPI Mode: Clock input	Input	SD_VIO
53	NC	No connect to gold fingers.	Floating	-
54	NC	No connect to gold fingers.	Floating	-
55	NC	No connect to gold fingers.	Floating	-
56	NC	No connect to gold fingers.	Floating	-
57	GND	Ground	GND	-
58	NC	No connect to gold fingers.	Floating	-
59	NC	No connect to gold fingers.	Floating	-
60	NC	No connect to gold fingers.	Floating	-
61	NC	No connect to gold fingers.	Floating	-
62	GND	Ground.	GND	-
63	NC	No connect to gold fingers.	Floating	-
64	NC	No connect to gold fingers.	Floating	-
65	NC	No connect to gold fingers.	Floating	-
66	GPIO3	GPIO	Input/Output	VIO

The information contained herein is the exclusive property of AzureWave and shall not be distributed, reproduced, or disclosed in whole or in part without prior written permission of AzureWave.

67	GPIO2	GPIO	Input/Output	VIO
68	GND	Ground.	GND	-
69	USB_D-	USB Serial Differential Data Negative	Input/Output	3.3V
70	USB_D+	USB Serial Differential Data Positive	Input/Output	3.3V
71	GND	Ground.	GND	-
72	3.3V	3.3V Power supply.	VCC	-
73	VIO	3.3V Power supply.	VCC	-
74	GND	Ground.	GND	-
75	GND	Ground.	GND	-
76	GND	Ground.	GND	-
77	GND	Ground.	GND	-
78	GND	Ground.	GND	-
79	GND	Ground.	GND	-
80	GND	Ground.	GND	-
81	GND	Ground.	GND	-
82	GND	Ground.	GND	-
83	GND	Ground.	GND	-
84	GND	Ground.	GND	-
85	GND	Ground.	GND	-
86	GND	Ground.	GND	-
87	GND	Ground.	GND	-
88	GND	Ground.	GND	-
89	GND	Ground.	GND	-
90	GND	Ground.	GND	-
91	GND	Ground.	GND	-
92	GND	Ground.	GND	-
93	GND	Ground.	GND	-

The information contained herein is the exclusive property of AzureWave and shall not be distributed, reproduced, or disclosed in whole or in part without prior written permission of AzureWave.

94	GND	Ground.	GND	-
95	GND	Ground.	GND	-
96	GND	Ground.	GND	-
G1	GND	Ground.	GND	-
G2	GND	Ground.	GND	-
G3	GND	Ground.	GND	-
G4	GND	Ground.	GND	-

The information contained herein is the exclusive property of AzureWave and shall not be distributed, reproduced, or disclosed in whole or in part without prior written permission of AzureWave.

3. Electrical Characteristics

3.1 Absolute Maximum Ratings

Symbol	Parameter	Condition	Min	Typ	Max	Units
VIO_SD	Host I/O power supply	--	--	1.8	2.2	V
3.3V	3.3V VBAT input	--	--	3.3	3.63	V
$T_{storage}$	Storage Temperature		-40		125	℃

3.2 Recommended Operating Conditions

Symbol	Parameter	Condition	Min	Typ	Max	Units
VIO_SD	Host I/O power supply	--	1.62	1.8	1.98	V
3.3V	3.3V VBAT input	--	2.97	3.3	3.63	V
T_A	Ambient operating temperature	--	-30		85	℃

3.3 Digital IO Pin DC Characteristics

3.3.1 DC Electricals-1.8V Operation (VIO_SD)

Symbol	Parameter	Minimum	Typical	Maximum	Unit
VIL	Input low voltage	-0.4	-	0.3*V18	V
VIH	Input high voltage	0.7*V18	-	V18+0.4	V
V_{HYS}	Input hysteresis	100	-	-	mV
VOL	Output low voltage	-	-	0.4	V
VOH	Output high voltage	V18-0.4	-	-	V

The information contained herein is the exclusive property of AzureWave and shall not be distributed, reproduced, or disclosed in whole or in part without prior written permission of AzureWave.

3.4 Host Interface

3.4.1 SDIO Interface

AW-NM191NF supports a SDIO device interface that conforms to the industry SDIO Full-Speed card specification and allows a host controller using the SDIO bus protocol to access the Wireless SoC device.

AW-NM191NF acts as the device on the SDIO bus. The host unit can access registers of the SDIO interface directly and can access shared memory in the device through the use of BARs and a DMA engine.

- On-chip memory used for CIS.
- Supports 4-bit SDIO and 1-bit SDIO transfer modes.
- Special interrupt register for information exchange.
- Allows card to interrupt host.

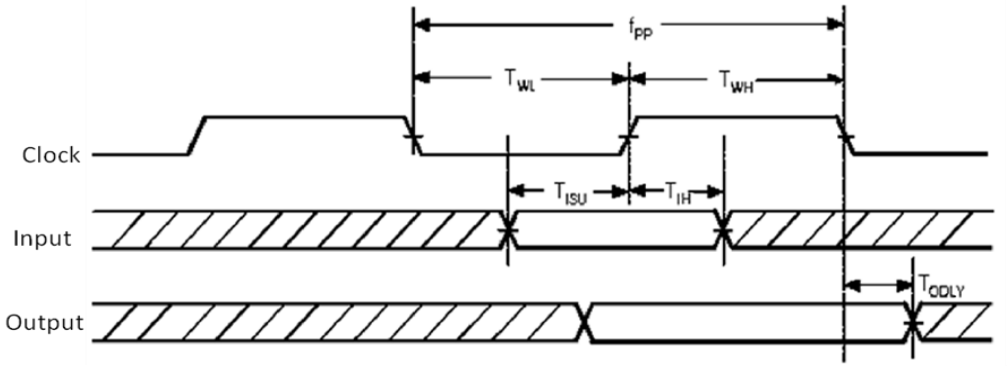
SDIO Interface Signals

AW-NM191NF SDIO Pin Name	Type	Description
SDIO_DATA_CLK	I	SDIO 4-bit mode: Clock SDIO 1-bit mode: Clock
SDIO_DATA_CMD	I/O	SDIO 4-bit mode: Command line SDIO 1-bit mode: Command line
SDIO_DATA_3	I/O	SDIO 4-bit mode: Data line Bit[3] SDIO 1-bit mode: Not used
SDIO_DATA_2	I/O	SDIO 4-bit mode: Data line Bit[2] or Read Wait (optional) SDIO 1-bit mode: Read Wait (optional)
SDIO_DATA_1	I/O	SDIO 4-bit mode: Data line Bit[1] SDIO 1-bit mode: Interrupt
SDIO_DATA_0	I/O	SDIO 4-bit mode: Data line Bit[0] SDIO 1-bit mode: Data line

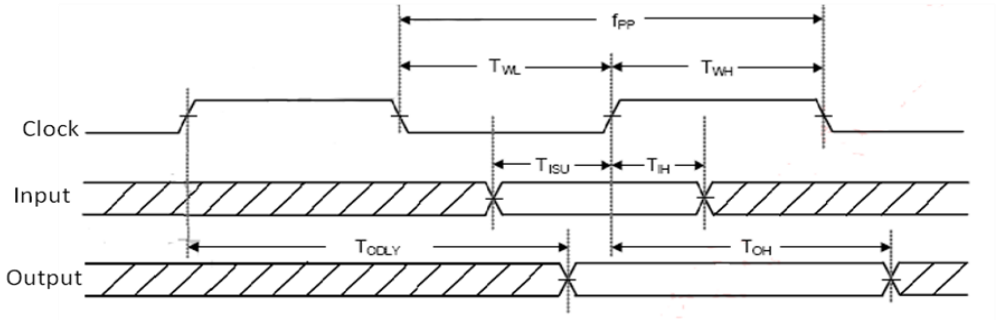
The information contained herein is the exclusive property of AzureWave and shall not be distributed, reproduced, or disclosed in whole or in part without prior written permission of AzureWave.

SDIO Protocol Timing

Default Speed, High-Speed Modes



SDIO protocol timing Diagram - Default mode.



SDIO protocol timing Diagram - High Speed mode.

Symbol	Parameter	Condition	Min	Typ	Max	Units
fpp	CLK Frequency	Normal	0	--	25	MHz
		High Speed	0	--	50	MHz
T_{WH}	CLK High Time	Normal	10	--	--	ns
		High Speed	7	--	--	ns
T_{WL}	CLK Low Time	Normal	10	--	--	ns
		High Speed	7	--	--	ns
T_{ISU}	Input Setup Time	Normal	5	--	--	ns
		High Speed	6	--	--	ns
T_{IH}	Input Hold Time	Normal	5	--	--	ns
		High Speed	2	--	--	ns
T_{ODLY}	Output Delay Time	Normal	--	--	14	ns
	CL ≦ 40pF (1 card)	High Speed	--	--	14	ns
T_{OH}	Output Hold Time	High Speed	2.5	--	--	ns

SDIO Timing Data – Default Speed / High-Speed modes.

The information contained herein is the exclusive property of AzureWave and shall not be distributed, reproduced, or disclosed in whole or in part without prior written permission of AzureWave.

3.5 Power up Sequence

The AW-NM191NF is reset, and the internal CPU begins the boot sequence when the PDn input pin transitions from low to high following NXP's power up sequence.

PDn pin has internal 10k ohm resistor pull-up to 3.3V.

3.5.1 Reset Configuration

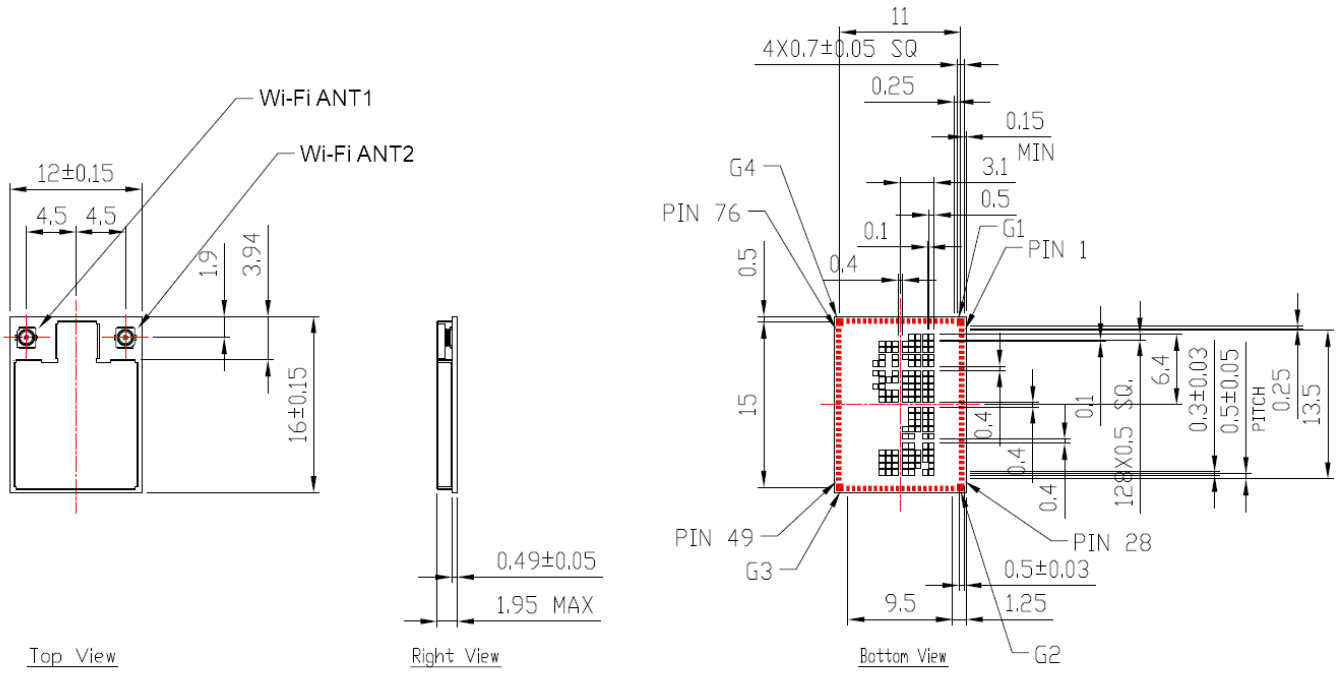
The AW-NM191NF is reset to its default operating state under the following conditions:

- Power-on reset (POR)
- Software/Firmware reset
- External pin for power down (PDn)

The information contained herein is the exclusive property of AzureWave and shall not be distributed, reproduced, or disclosed in whole or in part without prior written permission of AzureWave.

4. Mechanical Information

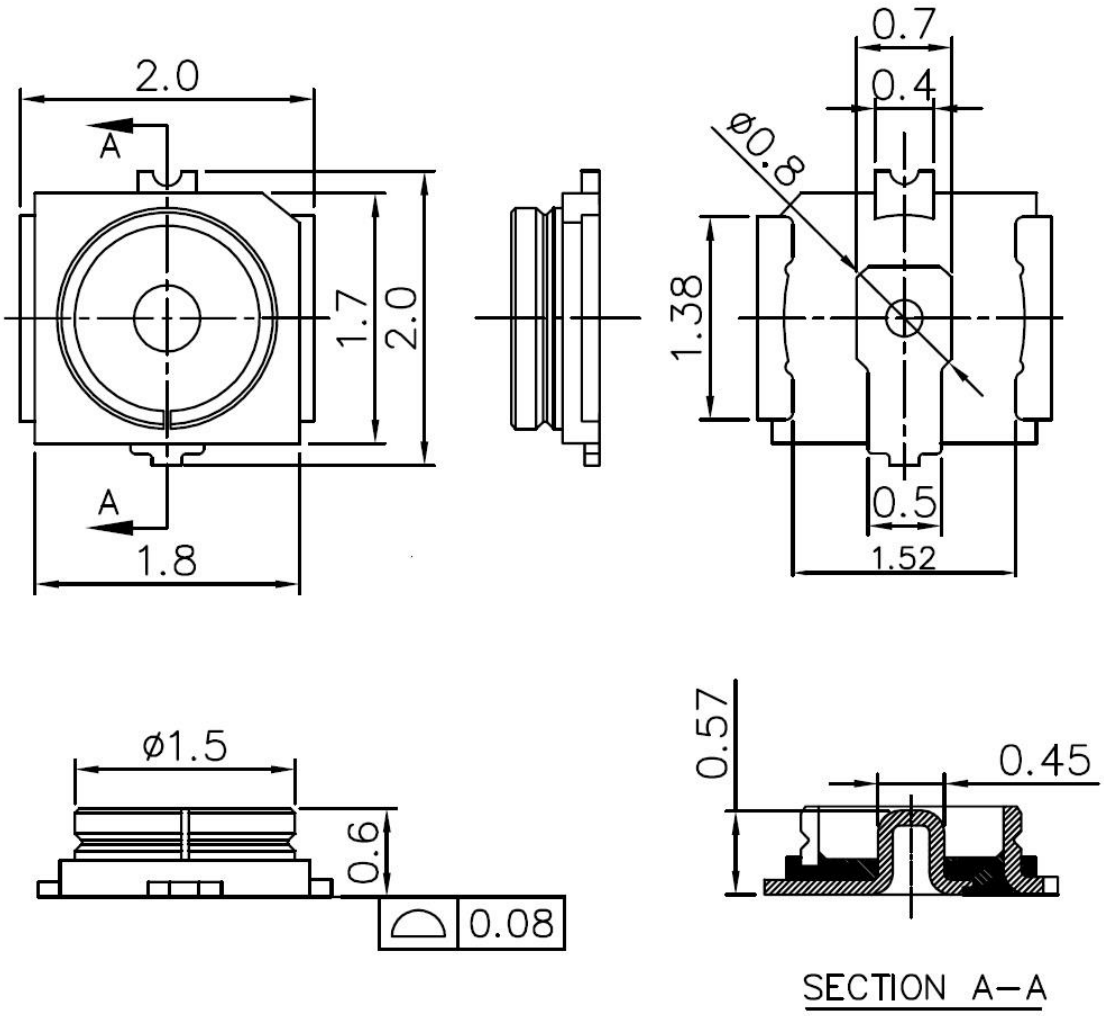
4.1 Mechanical Drawing



Tolerances unless otherwise specified : ±0.15mm

The information contained herein is the exclusive property of AzureWave and shall not be distributed, reproduced, or disclosed in whole or in part without prior written permission of AzureWave.

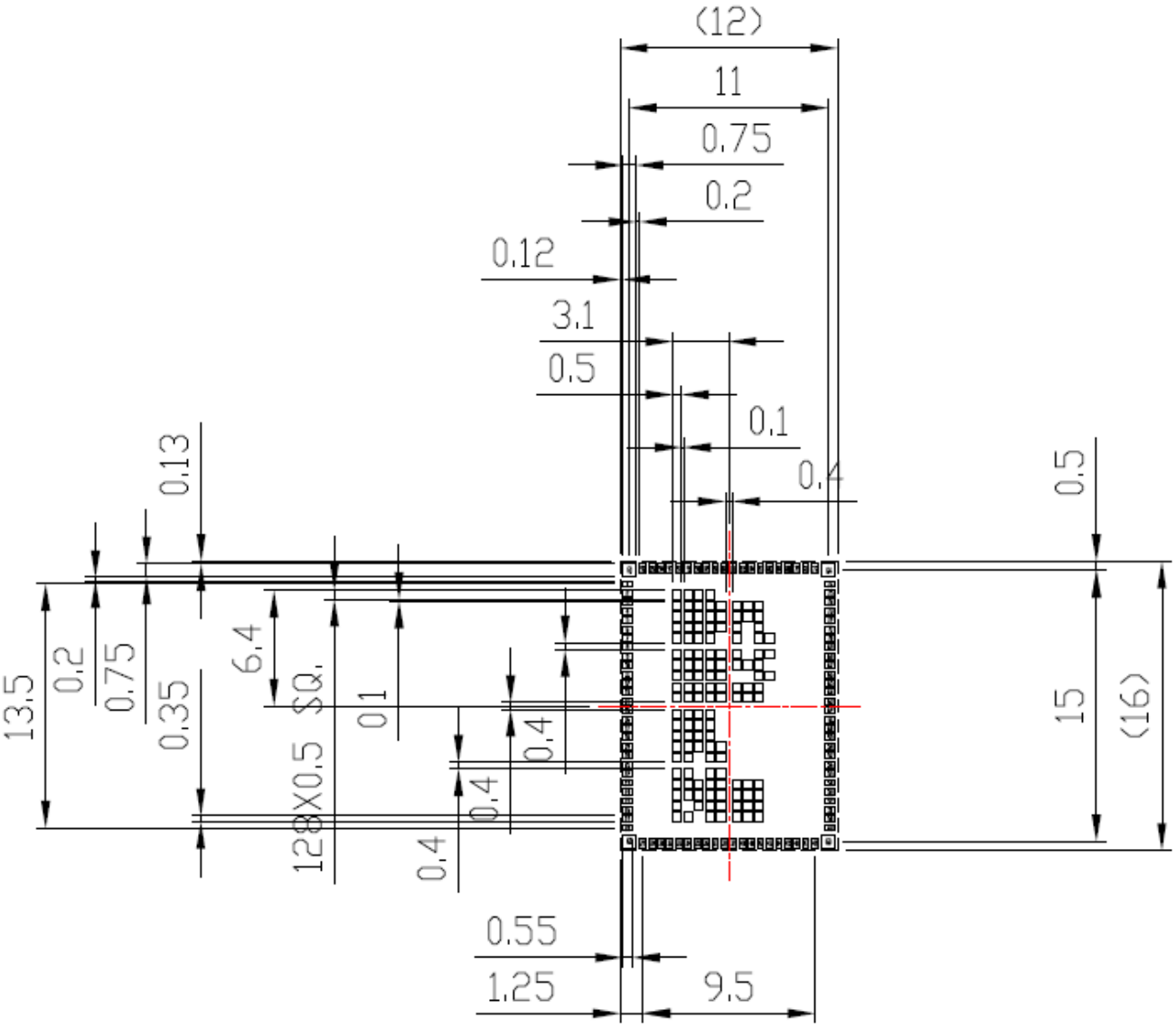
4.2 Antenna connector drawing



UNITS: mm

The information contained herein is the exclusive property of AzureWave and shall not be distributed, reproduced, or disclosed in whole or in part without prior written permission of AzureWave.

4.3 Recommended Footprint Pattern

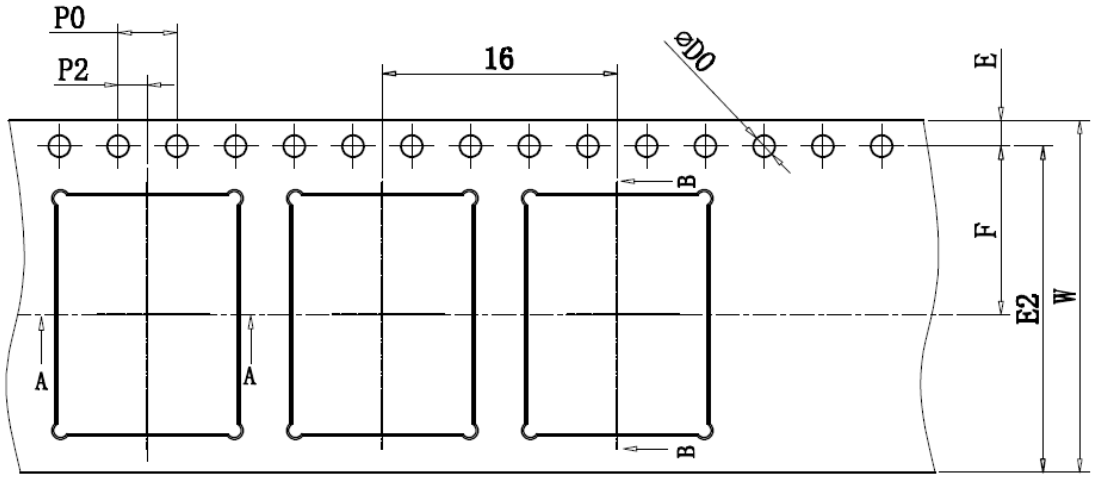


The information contained herein is the exclusive property of AzureWave and shall not be distributed, reproduced, or disclosed in whole or in part without prior written permission of AzureWave.

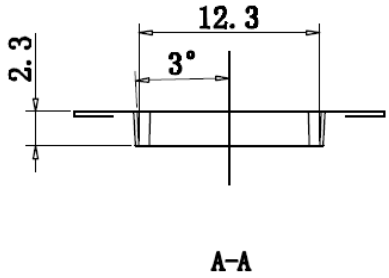
5. Shipping Information

5.1 Tape information

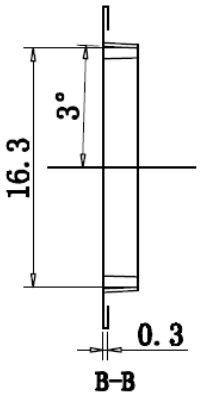
- Material: PS
- Color: Black
- Thickness: 0.30 mm



尺寸栏	
E	1.75±0.10
E2	22.25 MIN
F	11.50±0.10
P2	2.00±0.10
øDo	$1.50^{+0.10}_{0.00}$
øD1	
Po	4.00±0.10
10Po	40.00±0.20
W	24.00±0.30
P	16.00±0.10
Ao	12.30±0.10
BO	16.30±0.10
KO	2.3±0.10
t	0.30±0.05



A-A

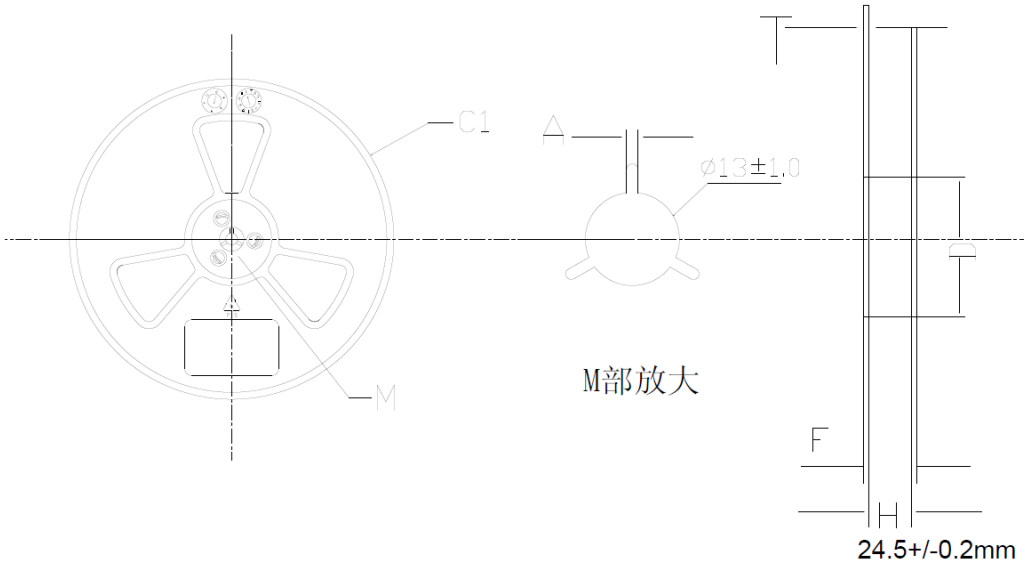


B-B

The information contained herein is the exclusive property of AzureWave and shall not be distributed, reproduced, or disclosed in whole or in part without prior written permission of AzureWave.

5.1 Reel information

- Material: PS
- Color: Blue
- Dimension: 13 inch

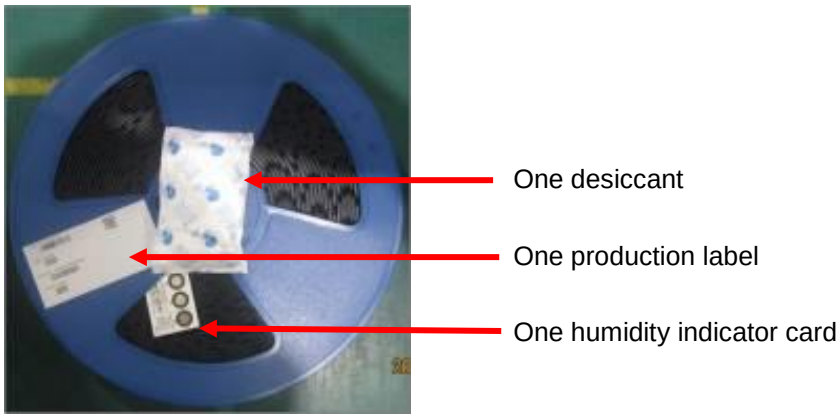


SPEC	24
C1±1	330
A±0.2	2. 3
H±0.2	**24.5**
T±0.2	**1.6**
D±0.2	***Φ100***

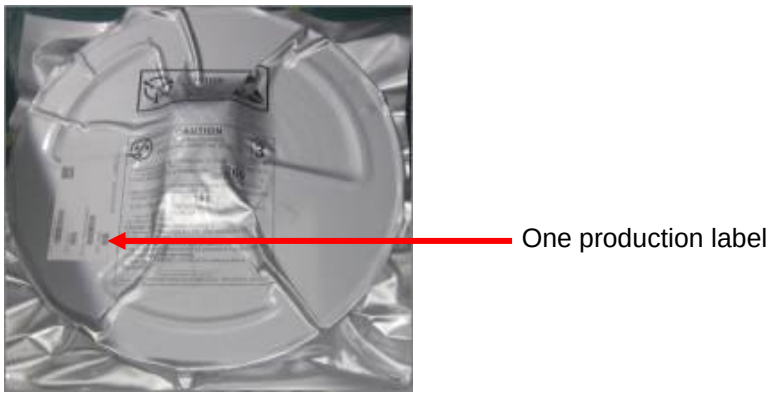
The information contained herein is the exclusive property of AzureWave and shall not be distributed, reproduced, or disclosed in whole or in part without prior written permission of AzureWave.

5.2 Packing Information

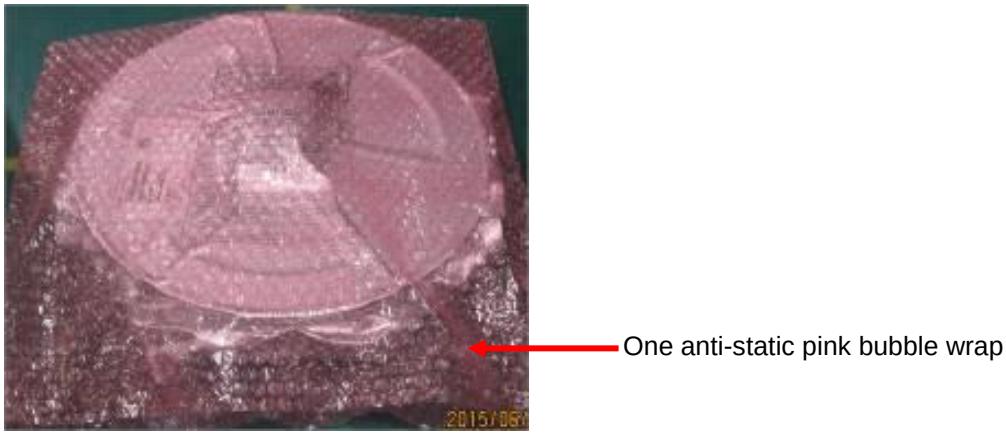
1. One reel can pack 1,500pcs M.2 1216 modules
2. One production label is pasted on the reel, one desiccant and one humidity indicator card are put on the reel



3. One reel is put into the anti-static moisture barrier bag, and then one label is pasted on the bag.



4. A bag is put into the anti-static pink bubble wrap



5. A bubble wrap is put into the inner box and then one label is pasted on the inner box

The information contained herein is the exclusive property of AzureWave and shall not be distributed, reproduced, or disclosed in whole or in part without prior written permission of AzureWave.

One production label

6. **5 inner boxes** could be put into one carton

7. Sealing the carton by AzureWave tape

8. One carton label and one box label are pasted on the carton. If one carton is not full, one balance label will be pasted on the carton

The information contained herein is the exclusive property of AzureWave and shall not be distributed, reproduced, or disclosed in whole or in part without prior written permission of AzureWave.

Example of carton label	AzureWave P/N: Customer: 由業務提供 Customer P/N: 由業務提供 Customer PO: 由業務提供 Description: AW-NM191NF QTY: 1200 pcs C/N: N.W.: G.W. RoHS COMPLIANT
Example of box label	
Example of production label	
Example of balance label (尾數標籤)	

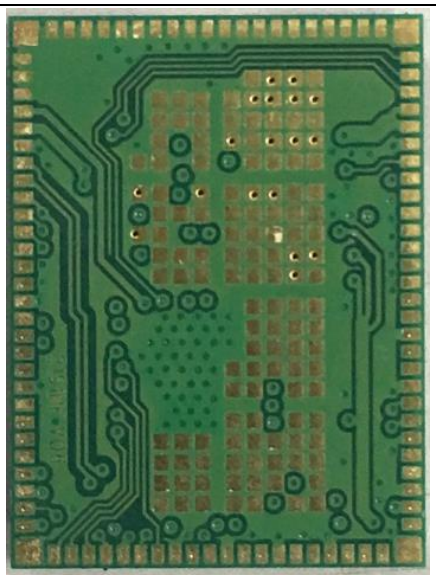
The information contained herein is the exclusive property of AzureWave and shall not be distributed, reproduced, or disclosed in whole or in part without prior written permission of AzureWave.

Note:

- **1 tape reel = 1 inner box = 1,500pcs**
- **1 carton = 5 inner boxes = 5 * 1,500pcs = 7,500pcs**

The information contained herein is the exclusive property of AzureWave and shall not be distributed, reproduced, or disclosed in whole or in part without prior written permission of AzureWave.

6. Module Marking Information

Top side	Bottom side
 2D Barcode ● Shows MAC Address of WLAN ● Size: 4 x 4 mm ● Type: Data Matrix	

The information contained herein is the exclusive property of AzureWave and shall not be distributed, reproduced, or disclosed in whole or in part without prior written permission of AzureWave.